

**Technical Data Sheet**

**Mini Top View LEDs**

**65-21-B1C-A1H2K1A1C-2T8-AM**

**Lead (Pb) Free Product - RoHS Compliant**



**Feature**

- P-LCC-2 package.
- Colorless clear resin.
- Wide viewing angle 120°.
- Inner reflector and white package.
- Brightness: 3.55 to 9 mcd at 10 mA.
- Qualification according to AEC-Q101.
- Precondition: Bases on JEDEC J-STD 020 Level 2.
- Automotive reflow profile (IR reflow or wave soldering)

**Applications**

- Automotive backlighting or indicator: Dashboard, switch, audio and video equipments...etc.
- Backlight: LCD, switches, symbol, mobile phone and illuminated advertising.
- Display for indoor and outdoor application.
- Ideal for coupling into light guides.
- Substitution of traditional light.
- Optical indicator.
- General applications.

**Device Selection Guide**

Chip	Emitted Color	Resin Color
Material		
GaN/SiC	Blue	Water Clear

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Absolute Maximum Ratings (Ta=25 )

Parameter	Symbol	Rating	Unit
Reverse Voltage	$V_R$	5	V
Forward Current	$I_F$	30	mA
Peak Forward Current (Duty 1/10 @1KHz)	$I_{FP}$	70	mA
Power Dissipation	$P_d$	130	mW
Junction Temperature	$T_j$	125	
Operating Temperature	$T_{opr}$	-40 ~ +100	
Storage Temperature	$T_{stg}$	-40 ~ +110	
Thermal Resistance	$R_{th\ J-A}$	500	K/W
	$R_{th\ J-S}$	300	K/W
ESD (Classification acc. AEC Q101)	$ESD_{HBM}$	2000	V
	$ESD_{MM}$	200	V
Soldering Temperature	$T_{sol}$	Reflow Soldering : 260 for 30 sec. Hand Soldering : 350 for 3 sec.	

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Electro-Optical Characteristics (Ta=25 )

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Luminous Intensity	$I_v$	3.55	-----	9*	mcd	$I_F=10mA$
Viewing Angle	$2\theta_{1/2}$	-----	120	-----	deg	$I_F=10mA$
Peak Wavelength	$\lambda_p$	-----	428	-----	nm	$I_F=10mA$
Dominant Wavelength	$\lambda_d$	462	----	468	nm	$I_F=10mA$
Spectrum Radiation Bandwidth	$\Delta\lambda$	-----	65	-----	nm	$I_F=10mA$
Forward Voltage	$V_F$	2.9	----	4.1	V	$I_F=10mA$
Reverse Current	$I_R$	-----	-----	10	$\mu A$	$V_R=5V$
Temperature coefficient of $\lambda_p$	$TC_{\lambda_p}$	-----	0.06	-----	nm/K	$I_F=10mA$
Temperature coefficient of $\lambda_d$	$TC_{\lambda_d}$	-----	0.4	-----	nm/K	$I_F=10mA$
Temperature coefficient of $V_F$	$TC_V$	-----	-2.3	-----	mV/K	$I_F=10mA$

Note:

Tolerance of Luminous Intensity:  $\pm 11\%$

Tolerance of Dominant Wavelength:  $\pm 1nm$

Tolerance of Forward Voltage:  $\pm 0.1V$

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**Bin Range of Luminous Intensity**

Bin Code	Min.	Max.	Unit	Condition
H2	3.55	4.5	mcd	I <sub>F</sub> =10mA
J1	4.5	5.6		
J2	5.6	7.1		
K1	7.1	9		

Note

Tolerance of Luminous Intensity : ±11%

**Bin Range of Dominant Wavelength**

Bin Code	Min.	Max.	Unit	Condition
1	462	465	nm	I <sub>F</sub> =10mA
2	465	468		

Note:

Tolerance of Dominant Wavelength: ±1nm

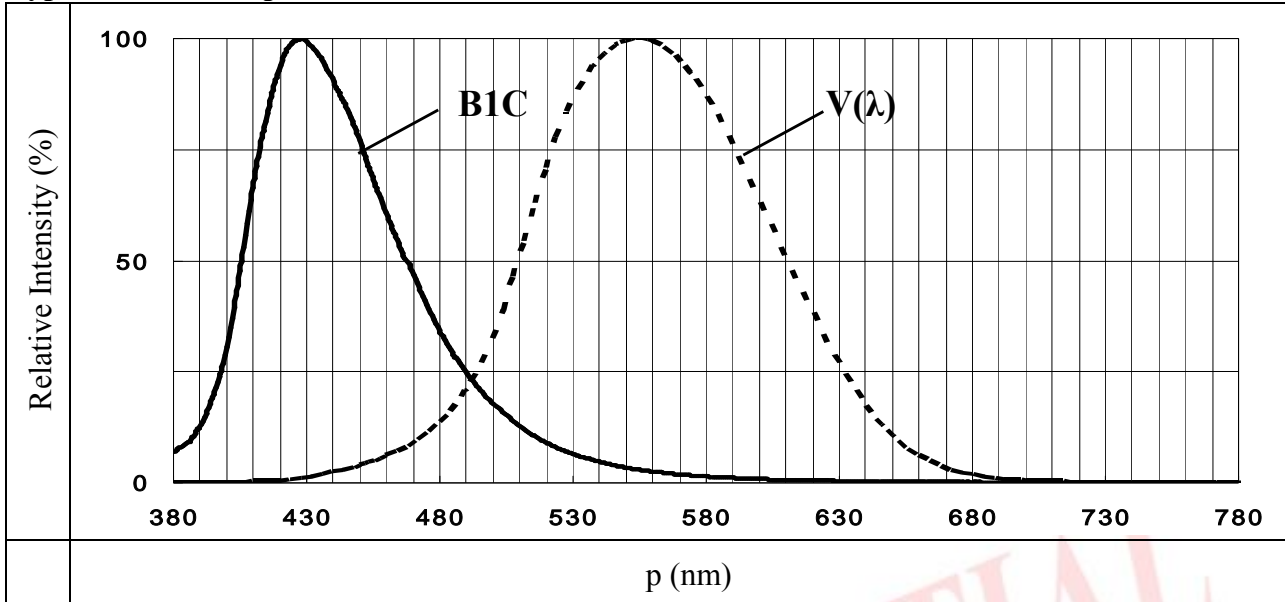
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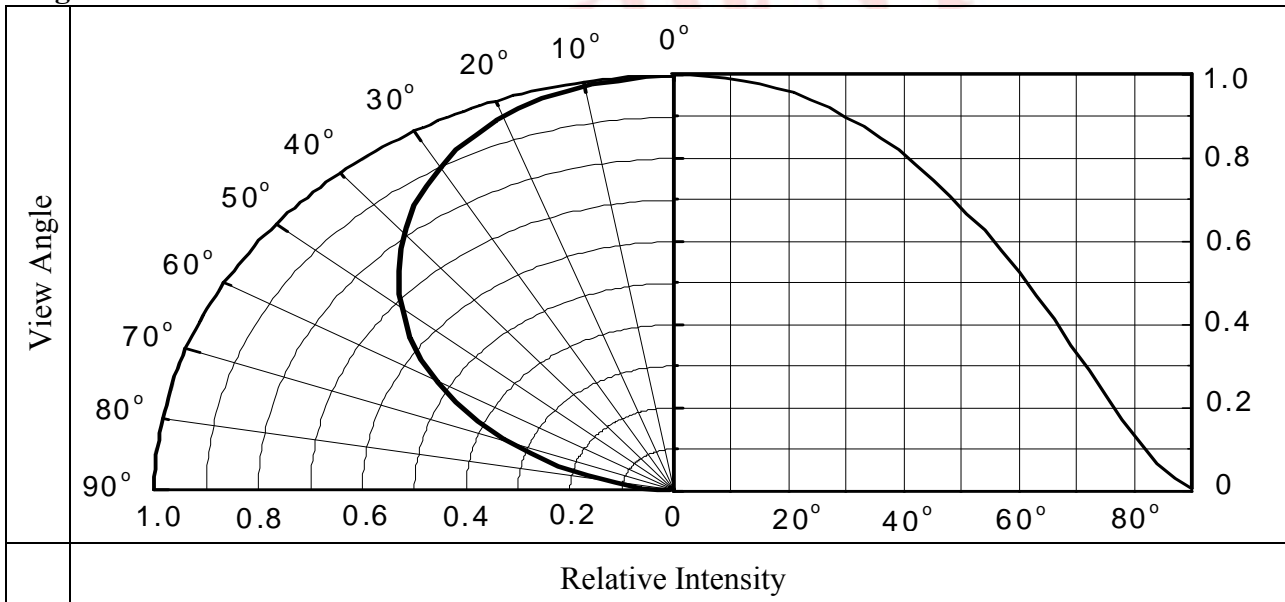
Typical Electro-Optical Characteristics Curves

Typical Curve of Spectral Distribution



Note:  $V(\lambda)$ =Standard eye response curve

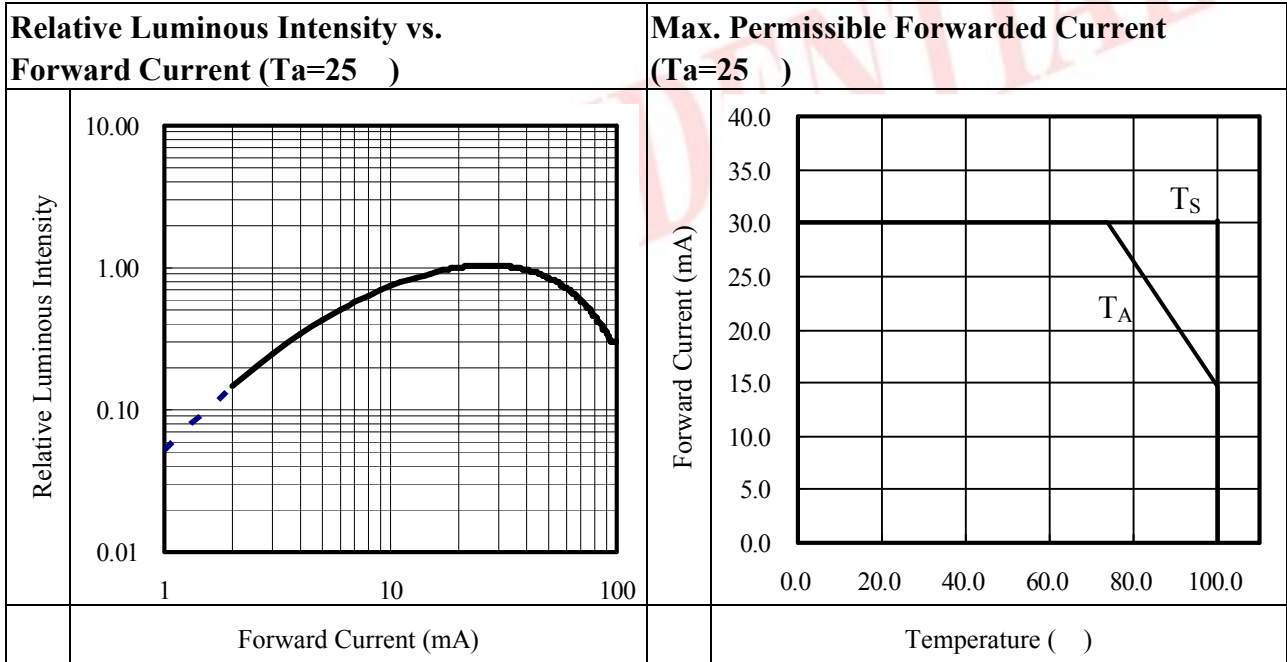
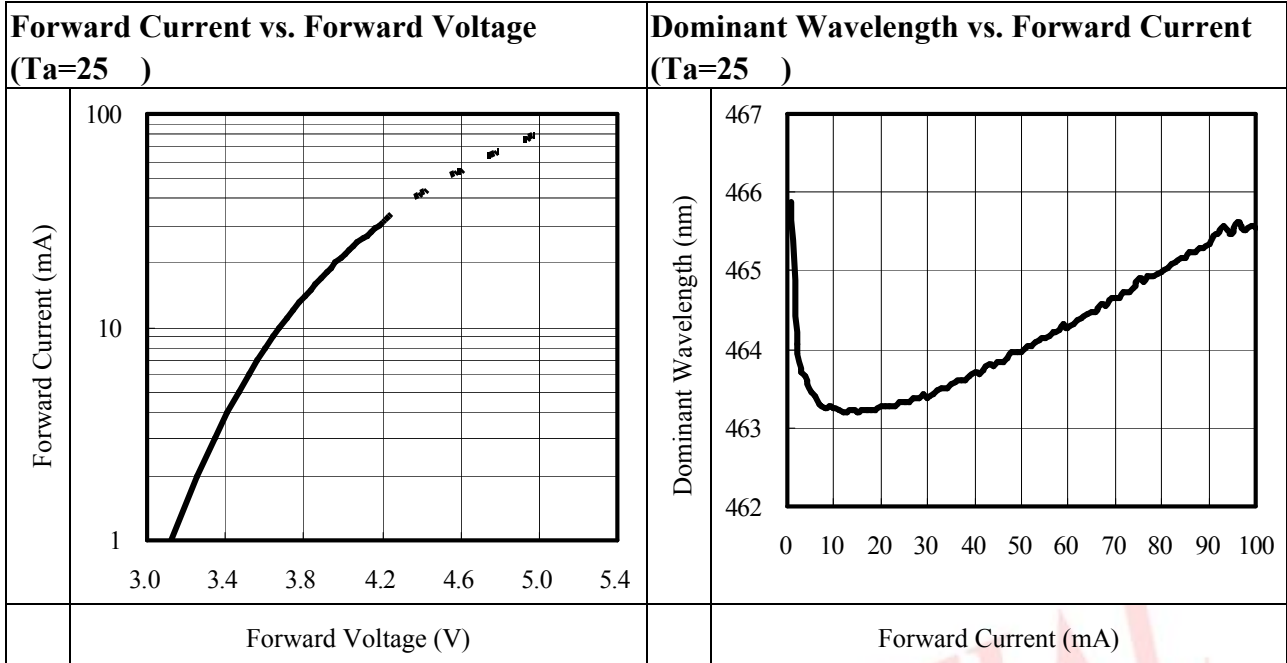
Diagram Characteristics of Radiation



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Relative Luminous Intensity vs. Junction Temperature		Relative Forward Voltage vs. Junction Temperature	
Relative Luminous Intensity		Relative Forward Voltage	
	Junction Temperature ( °C )		Junction Temperature ( °C )
Note: $f(T_j) = I_v / I_v(25^\circ\text{C})$ ; $I_F = 20\text{mA}$		Note: $V_F = V_F(25^\circ\text{C}) - V_F(T_j) = f(T_j)$ ; $I_F = 20\text{mA}$	

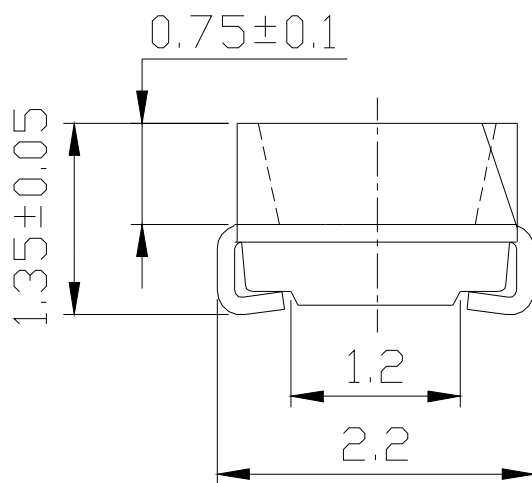
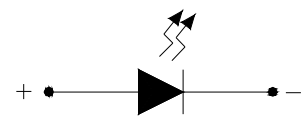
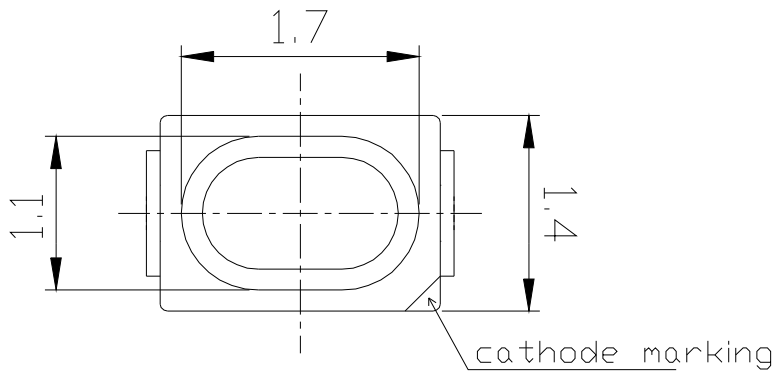
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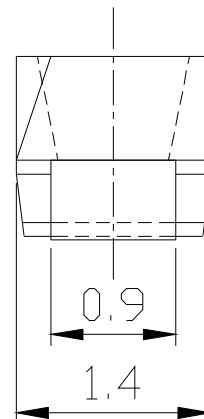
**Mini Top View LEDs**

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**Package Dimension**



Polarity



Note: Tolerances unless mentioned  $\pm 0.1$ mm. Unit = mm

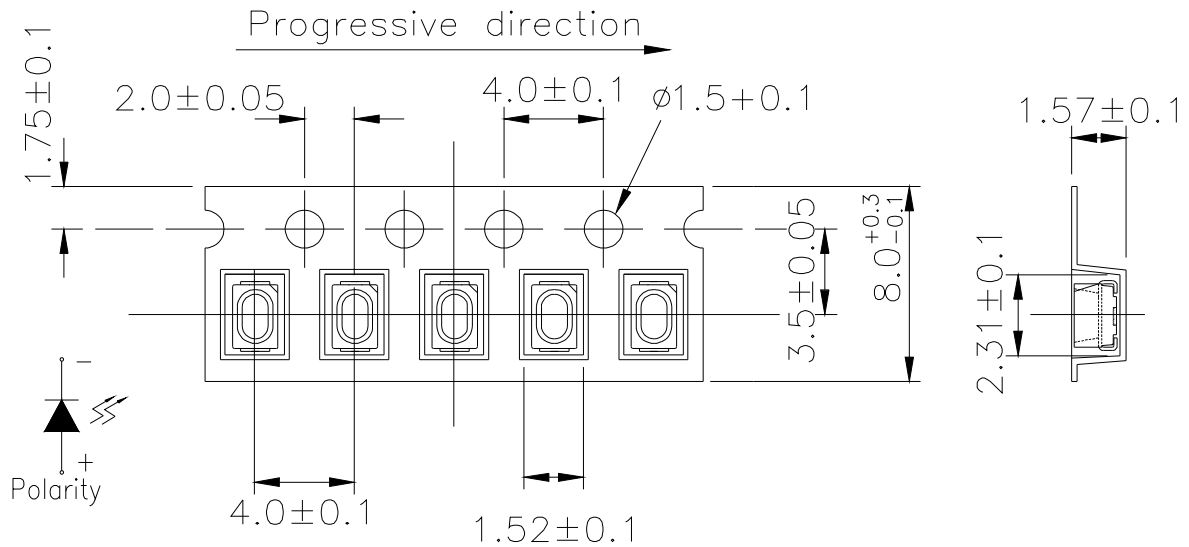


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Carrier Tape Dimensions: Loaded Quantity 2000 pcs Per Reel



Note: Tolerances unless mentioned  $\pm 0.1$ mm. Unit = mm

**Label Explanation**

- CPN: Customer's Product Number
- P/N: Product Number
- QTY: Packing Quantity
- CAT: Luminous Intensity Rank
- HUE: Dom. Wavelength Rank
- REF: Forward Voltage Rank
- LOT No: Lot Number

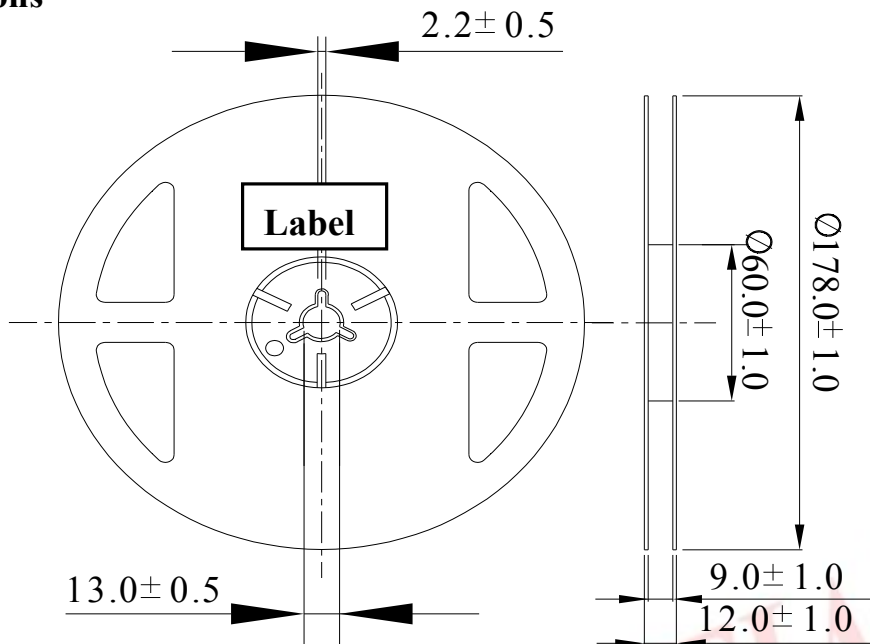


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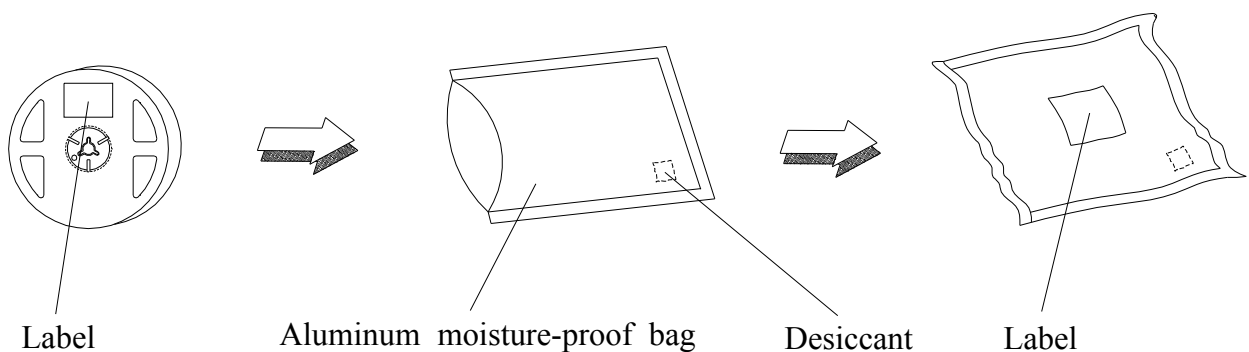
**65-21-B1C-A1H2K1A1C-2T8-AM**

**Reel Dimensions**



Note: Unit = mm

**Moisture Resistant Packing Process**



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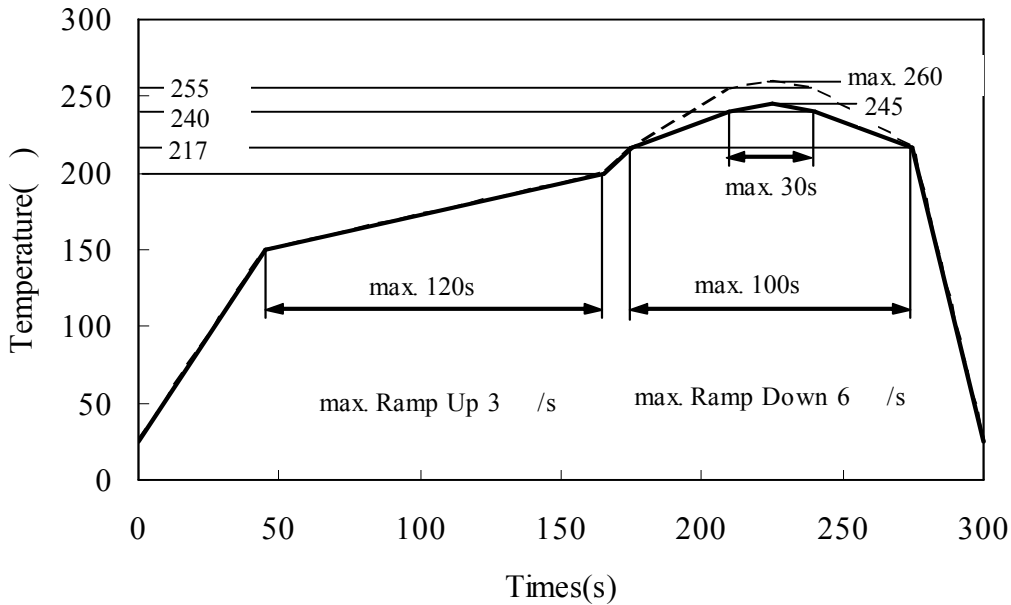
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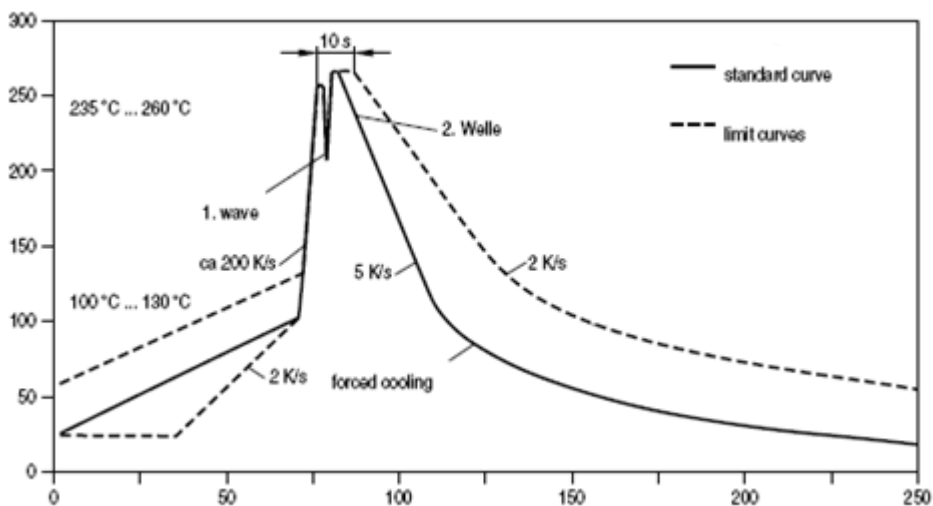
**Precautions for Use**

**1. Soldering Condition (Reference: IPC/JEDEC J-STD-020D)**

**a. IR reflow**



**b. Wave soldering reflow**

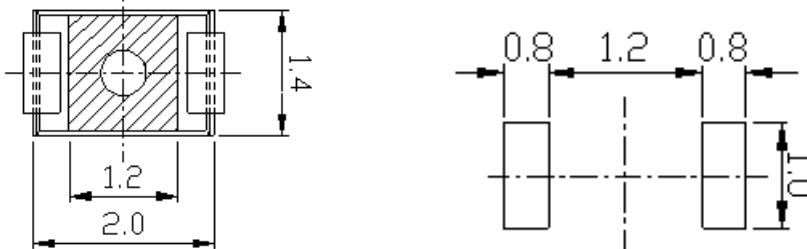


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(B) Recommend soldering pad



Note: Tolerances unless mentioned  $\pm 0.1$ mm. Unit = mm

**2. Current limiting**

A resistor should be used to limit current spikes that can be caused by voltage fluctuations. Otherwise damage could occur.

**3. Storage**

- 3.1 Moisture proof bag should only be opened immediately prior to usage.
- 3.2 Environment should be less than 30 °C and 60% RH when moisture proof bag is opened.
- 3.3 After opening the package MSL Conditions stated on page 1 of this spec should not be exceeded.
- 3.4 If the moisture sensitivity card indicates higher than acceptable moisture, the component should be baked at min. 60deg +/-5deg for 24 hours.

**4. Iron Soldering**

Hand soldering is not recommended for regular production. These guidelines are for rework only. Soldering iron tip should contact each terminal no more than 3 sec at 350 °C, using soldering iron with nominal power less than 25W. Allow min. 2 sec. between soldering intervals.

**5. Usage**

Do not exceed the values given in this specification.

**Application Restrictions**

High reliability applications such as military/aerospace, automotive safety/security systems, and medical equipment may require different product. If you have any concerns, please contact Everlight before using this product in your application. This specification guarantees the quality and performance of the product as an individual component. Do not use this product beyond the specification described in this document.



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Revision History:

Rev.	Modified date	File modified contents
1	2009/07/29	New Spec
2	2009/12/8	修正為 Mini Top View LEDs
3	2010/03/24	變更為正式版本

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